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Amendments to the Claims

The following listing of the claims replaces all previous listings.

Please cancel all previously pending claims (1-47) and add new claims 48- 83.

Claims 1-47. Cancelled

48. (new) A method for quantitatively assaying a target molecule in a first sample, comprising:

(a) adding to the first sample, a preparation of a nucleic acid aptamer specific for the target molecule;

(b) allowing substantially all of the target molecule in the first sample to bind with the aptamer;

(c) separating unbound aptamer from the first sample by contacting the sample of step (b) with immobilized ligand, thereby binding the ligand to unbound aptamer, so as to recover a second sample of aptamer bound to target molecule; and

(d) using a quantitative replicative procedure comprising a replicative polymerase reaction to determine a quantity of aptamer specific for the target molecule in the second sample and therefore related to the concentration of target molecule in the first sample.

49. (new) A method according to claim 48, wherein the nucleic acid aptamer is selected from the group consisting of single-stranded DNA, double-stranded DNA, single-stranded RNA, double-stranded RNA and chemical modifications thereof.

50. (new) A method according to claim 48, wherein the target molecule is present in the sample at molar concentrations less than their dissociation constants with respect to the aptamers.

51. (new) A method according to claim 48, wherein the target molecule is present in the sample at molar concentrations equal to or greater than their dissociation constants with respect to the aptamers.

52. (new) A method according to claim 48, wherein the target molecule is a low abundance molecule.

53. (new) A method according to claim 48, where the target molecule includes a biological macromolecule.

54. (new) A method according to claim 53, wherein the biological macromolecule is selected from the group consisting of a protein, a lipid, a polysaccharide or combinations thereof.

55. (new) A method according to claim 48, wherein the target molecule includes a small organic molecule.

56. (new) A method according to claim 55, wherein the small organic molecule is selected from the group consisting of antibiotics, vitamins, steroids, and pesticides.

57. (new) A method according to claim 48, wherein the target molecule includes an inorganic molecule.

58. (new) A method according to claim 57, wherein the inorganic molecule is a metal.

59. (new) A method according to claim 58, wherein the metal is selected from the group consisting of metal ions, metal oxides, and metal complexes.

68. (new) A method according to claim 48, wherein determining the quantity of aptamer bound to the target molecule further includes denaturing the aptamer so as to separate the nucleic acid from the target molecule.

69. (new) A method according to claim 68, wherein oligonucleotide primers are added to the sample after denaturing the aptamer from the target molecule.

70. (new) A method according to claim 69, wherein determining the quantity of aptamer includes determining a number of replicative cycles.

71. (new) A method according to claim 53, wherein the target molecule is an antibody.

72. (new) A method according to claim 71, wherein the target molecule includes IgE.

73. (new) A method according to claim 48, wherein the target molecule includes a plurality of antibody molecules belonging to different subclasses characterized by a difference in the hypervariable region of each antibody.

74. (new) A method according to claim 48, wherein the target molecule is a subclass of an antibody having a characteristic hypervariable region.

75. (new) A method according to any of claims 71-72 or 74, wherein the aptamer binds to a constant region of the antibody and wherein the immobilized ligand is the constant region of the antibody for removing unbound aptamer from the sample.

60. (original) A method according to claim 48, wherein the first sample is obtained from an animal subject.

61. (new) A method according to claim 60, wherein the first sample is selected from the group of tissues consisting of organ tissue, muscle tissue, bone tissue, connective tissue, fetal tissue, and placental tissue.

62. (new) A method according to claim 48, wherein the first sample is a biological fluid selected from the group consisting of blood, lymph, urine, sputum, joint fluid, spinal fluid, and saliva.

63. (new) A method according to claim 48, wherein the first sample is an environmental sample.

64. (new) A method according to claim 63, wherein the environmental sample is obtained from a source selected from the group consisting of plants, water, food beverages (including milk), and industrial waste.

65. (new) A method according to claim 48, wherein the immobilized ligand is immobilized on a support matrix selected from the group consisting of resins, beads, magnetic beads, gels, cellulose and silica.

66. (new) A method according to claim 48, wherein the immobilized ligand is immobilized on an affinity column.

67. (new) A method according to claim 48, wherein the quantitative replicative procedure is a quantitative polymerase chain reaction.

76. (new) A method according to claim 74, wherein the second sample contains antibody-bound aptamer, the second sample being divided into a plurality of aliquots, and a first aliquot of the second sample being assayed using a quantitative replicative procedure to determine quantity of antibody in the first sample.

77. (new) A method according to claim 76, further comprising:

(a) contacting a second aliquot of the second sample with an immobilized ligand for binding an antibody with a first hypervariable region; wherein the antibody with a first hypervariable region is a target molecule in the first sample;

(b) recovering a third sample containing the aptamer bound to target molecule excluding the antibody with the first hypervariable region;

(c) assaying the aptamer concentration in the third sample using the quantitative replicative procedure, so as to determine a difference in a quantity of aptamer in the second sample and the third sample; and

(d) determining a quantity of the antibody with the first hypervariable region in the first sample from the difference.

78. (new) A method according to claim 76, further comprising:

(a) contacting a plurality of aliquots of the second sample with a plurality of immobilized ligands wherein each ligand is immobilized by attachment to a substrate in a single chamber, each immobilized ligand having a specificity for an antibody with a different hypervariable site;

(b) recovering a third sample containing the aptamer bound to target molecule excluding the antibody bound to immobilized ligand;

(c) assaying the aptamer concentration in the third sample using the quantitative replicative procedure, so as to determine a difference in a quantity of aptamer in the second sample and the third sample; and

(d) determining a quantity of the antibody with the hypervariable region in the first sample from the difference.

79. (new) A method according to claim 77, wherein the ligand is a specific antigen.

80. (new) A method according to claim 48, wherein the ligand is a reagent having the aptamer-binding characteristics of the target molecule.

81. (new) A method according to any one of claims 77 or 78, wherein the antibody is IgE.

82. (new) A method according to claim 73, wherein the aptamer binds to a constant region of the plurality of antibody molecules and wherein the immobilized ligand is the constant region of the antibody molecules for removing unbound aptamer from the sample.

83. (new) A method according to claim 78, wherein each ligand is a specific antigen.